

What is claimed is:-

1. A method for identifying a transaction corresponding to a plurality of service packets communicated between a source node and a destination node, comprising:

5 providing a communications data set comprising a plurality of service packets and information relating to the order in which said service packets are communicated on a communications line between a source node and a destination node; and

10 comparing said communications data set against a pattern characterization data set comprising information relating to a predetermined ordering of service packets corresponding to a transaction to determine whether at least a portion of said plurality of service packets correspond to said transaction.

2. The method as claimed in Claim 1, wherein said  
15 communications data set includes a received time corresponding to each service packet and said providing step comprises:

reading with a probe said service packets from said communications line; and

20 recording said service packets and said received time, wherein said received time corresponds substantially to the time said packet is read by said probe.

3. The method as claimed in Claim 2, wherein said probe is located between said source and destination nodes and further comprising:

25 adding to said received time for a received packet a transit time corresponding substantially to the time required by a service packet to travel from said probe to at least one of said source node and destination node.

30 4. The method as claimed in Claim 1, wherein a plurality of said service packets have at least one of a node address and port number and said communications data set includes a received time corresponding to each service packet and said providing step comprises:

35 reading with a probe said service packets from said communications line;

filtering said service packets based on at least one of node address and port number to form filtered service packets; and

40 recording said filtered service packets and said received time, wherein said received time corresponds substantially to the time said filtered service packet is read by said probe.

5. The method as claimed in Claim 1, wherein said service packets correspond to a plurality of threads with each thread corresponding to thread identification information and  
45 said comparing step comprises:

sorting said service packets in said communications data set into a plurality of thread data sets wherein the service packets in each thread data set have the same thread identification information.

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6. The method as claimed in Claim 1, wherein said service packets include service request packets and service results packets, each service request corresponds to a service request, and said comparing step comprises:

55 identifying service request packets in said service packets based on the contents of said service packets.

7. The method as claimed in Claim 1, wherein said service packets include service request packets and service results packets and said comparing step comprises:

60 identifying service request packets in said service packets based on the contents of said service packets;

correlating service results packets with corresponding service request packets; and

determining the start and stop times for the service request.

65 8. The method as claimed in Claim 7, further comprising:

computing a response time for said transaction.

9. The method as claimed in Claim 7, further comprising:

70 comparing the time interval between the stop of a first service request and the start of a second service request against a predetermined value for said time interval to identify a sequence of service requests corresponding to a transaction, wherein said predetermined ordering of service  
75 packets corresponds to said sequence of service requests.

10. The method as claimed in Claim 1, wherein said service packets correspond to a plurality of service requests and said comparing step comprises:

80 first matching a first service request in said communications data set with a first service request in said predetermined ordering of service packets;

85 second matching a second service request in said communications data set with a second service request in said predetermined ordering of service packets, wherein a time interval between said first and second service requests is no more than a predetermined value.

11. The method as claimed in Claim 1, wherein said service packets correspond to a plurality of service requests, said service requests correspond to a plurality of thread data sets, and said comparing step comprises:

90 first matching a first service request corresponding to a first thread with a first service request in said predetermined ordering of service packets;

95 second matching a second service request corresponding to a second thread with a second service request in said predetermined ordering of service packets, wherein a time interval between said first and second service requests is no more than a predetermined value.

12. A non-intrusive system for identifying a transaction  
100 corresponding to a plurality of service packets communicated  
between a source node and a destination node, comprising:

means for recording a plurality of service packets  
communicated on a communications line between a source node  
and a destination node, said recording means being in  
105 communication with said communications line; and

means, in communication with said recording means, for  
identifying a transaction corresponding to at least a portion  
of said plurality of packets.

13. The non-intrusive system as claimed in Claim 12,  
110 wherein said identifying means comprises means for comparing  
said plurality of service packets and the order in which said  
service packets are received by said recording means against  
a predetermined ordering of service packets relating to said  
transaction.

14. The non-intrusive system as claimed in Claim 12,  
115 wherein said recording means is located on a portion of said  
communications line between said source and destination nodes.

15. A method for identifying a transaction corresponding to a plurality of service packets communicated between a source node and a destination node, comprising:

providing a communications data set comprising (i) a plurality of service packets corresponding to a plurality of service requests and (ii) the start and stop times for each service request; and

comparing the time interval between the stop of a first service request and the start of a second service request against a predetermined value for said time interval to identify a sequence of said service requests corresponding to a transaction.

16. The method as claimed in Claim 15, wherein said predetermined value ranges from about 50 to about 500 milliseconds.

17. The method as claimed in Claim 15, wherein a portion of said service packets correspond to a thread and at least two service packets correspond to different threads and said service packets comprise a plurality of service request packets and service result packets corresponding to different service requests and said comparing step comprises:

identifying service request packets in said service packets;

correlating service result packets with corresponding service request packets to form a plurality of service data

subsets with the service packets in each service data subset corresponding to a service request; and

145        sorting said service data subsets by thread to form a plurality of thread data sets of service requests with the service packets in said thread data set having the same thread addresses.

150        18. The method as claimed in Claim 15, wherein a plurality of sequences of service requests correspond to a plurality of transactions and said comparing step comprises:

recording each of said sequences of service requests and the number of occurrences of each sequence in a pattern characterization data set.

155        19. The method as claimed in Claim 15, further comprising:

selecting a second predetermined value;

160        comparing said time interval against said second predetermined value to identify a second sequence of said service requests corresponding to a second transaction; and

recording each of said second sequences of service requests and the number of occurrences of each of said second sequences in a second data set.

165        20. The method as claimed in Claim 19, further comprising:

selecting a third predetermined value based on the relationship between (i) the number of said sequences of service requests and said predetermined value and (ii) the

number of said second sequences of service requests and said  
170 second predetermined value.

21. The method as claimed in Claim 20, further  
comprising:

comparing said time interval against said third  
predetermined value for said time interval to identify a third  
175 sequence of said service requests corresponding to a third  
transaction.

22. The method as claimed in Claim 21, further  
comprising:

comparing said third sequence against said communications  
180 data set to determine whether at least a portion of said  
plurality of service packets correspond to said transaction.

23. The method as claimed in Claim 22, further  
comprising:

computing a response time for said transaction.

185 24. The method as claimed in Claim 15, wherein said  
comparing step produces a pattern characterization data set  
listing a plurality of sequences of service requests and  
further comprising:

second comparing said service requests from said  
190 comparing step with said pattern characterization data set to  
determine if said service requests are contained in said  
pattern characterization data set.



25. The method as claimed in Claim 15, wherein said  
first service request corresponds to a first thread and said  
195 second service request corresponds to a second thread.

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26. A non-intrusive system for determining transaction level activity between a source node and a destination node, comprising:

means for recording a plurality of service packets  
200 communicated on a communications line between a source node and a destination node, wherein said service packets relate to a number of transactions and said recording means is in communication with said communications line; and

means for determining said number of transactions in  
205 communication with said recording means.

27. The non-intrusive system as claimed in Claim 26, wherein said determining means comprises means for comparing said plurality of service packets and the order in which said service packets are received by said recording means against  
210 a predetermined ordering of service packets relating to said transaction.

28. The non-intrusive system as claimed in Claim 26, wherein at least a portion of said plurality of packets relate to different service request packets, said recording means  
215 provides a first data set including (i) said plurality of packets and (ii) the start and stop times for each service request, and said determining means comprises means for comparing the time interval between the stop time of a first service request and the start time of a second service request  
220 against a predetermined value for said time interval to

identify a sequence of ~~Q~~ said service requests corresponding to a transaction.

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